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INTEGRATED PRE-CHARGE FOR CONTROLLED BRAKE SYSTEMS

ABSTRACT OF THE INVENTION

First and second pumps are integral in that the pumps are driven by a common motor. The first pump is driven in pumping motion by an eccentric disposed on the motor shaft and the second pump is driven in pumping motion by an end of the motor shaft. The first pump can be an ABS pump and the second pump can be a pre-charge pump. The first and second pumps can be disposed in a common block housing and the common block housing can define a fluid path extending from the outlet of the second pump to the inlet of the first pump. A third pump can be substantially similar to the first pump and be disposed on an opposite side of the shaft as the first pump. The third pump can be driven in pumping motion by the eccentric. A separate feed line can be directed from the reservoir of the brake system to the second pump to improve performance.